WATER

Water Quantity – Awesome Aquifer

What is groundwater?

Groundwater is the water we drink and the water that grows our food. It is found underground in the cracks and spaces between the sand and rocks. These underground formations are called aquifers.

Key Topics: Aquifer, Groundwater, Recharge

Grade Level: K- 12th grade (Adaptable)

Items Needed: LCNRD provides Awesome Aquifer kits

Duration: 30-40 Minutes

Objectives: Learn groundwater concepts by building a model aquifer. It's sometimes easier to understand groundwater and how they work if you can "see" it.

H_2Oh No! — Flow Model & Water Quality

How clean is my water?

Water is essential to human life, but how clean is it? Water is often found with contaminants that can harm human health and infiltrate into our groundwater without our knowing. Testing our water is important to sustaining clean water.

Key Topics: Water Quality, nitrates, point and non-point pollution, contamination, colorimeters

Grade Level: K- 12th grade (Adaptable)

Items Needed: LCNRD provides Flow Model and water samples from domestic wells

Duration: 30-40 minutes

Objectives: Explore the importance of water quality and its impacts on human health. Using colorimeters to test nitrate levels in water samples. Using the flow model to observe point and nonpoint contamination and groundwater flow.

Enviroscape

What is a watershed, and how does it become polluted?

It is an area draining to a particular body of water. A body of water is any river, lake, stream, ocean, or pond. Everyone lives in a watershed. Watersheds drain rainfall and melting snow into the nearest waterbody that lies at the lowest point of the watershed. Promote awareness by showing sources of water pollution, what is currently being done to manage these, and what can be done to better manage potential pollutants.

Key Topics: watershed, point and non-point contamination, environment, artificial and natural pollution, erosion, waterway, surface, and groundwater, storm runoff

Grade Levels: K- 12th grade (Adaptable)

Duration: 30 – 40 minutes

Items Needed: LCNRD provides Enviroscape

Objectives: See firsthand the outcomes of point and nonpoint pollution. Enviroscape is an interactive 3-D model that illustrates residential, recreational, agricultural, industrial, and transportation areas – all representing possible sources of water pollution in the environment.

We All Use Water

Are you a direct or indirect water user? Or both?

We each use water every day. Farmers use water to grow the food we eat. Power plants use water to make electricity to light our homes and run our TV sets and computers. Water companies clean water so we can safely drink it. Every day, somewhere, kids are swimming, fishing, and boating with their families, or maybe skiing or ice skating.

Some uses of water are direct, such as when a farmer waters his or her plants to grow food or when people wash, bathe, or cook. Indirect water uses may be less obvious.

Key Topics: agriculture, earth systems, energy, direct and indirect use, fish and wildlife, industry, irrigation

Grade Levels: 3rd-6th grade

Items Needed: LCNRD provides materials

Duration: 30-40 minutes

Objectives: The student will be able to explain the difference between direct and indirect water use. Identify ways that they use water directly and indirectly. Recognize that they are connected to other water users as a consumer of products.

Know Your Well Project

Program Background

Know Your Well is a Nebraska Environmental Trust (NET) funded project that trains high school students how to sample and test domestic well water quality. The program began in 2017 and has a goal of testing over 300 private wells for nitrates, nitrites, metals, pesticides, and coliform bacteria. Students collect water samples and test the water data to determine vulnerability to contamination. Well owners are supplied with test results and provided information to help them evaluate their water quality.

Key Topics: water quality, domestic wells, nitrates, testing, results

Grade Level: 9th-12th grade

Duration: 30-40 minutes (Spring & Fall Semesters)

Items Needed: LCNRD & UNL provide educational materials and testing equipment

Objective: Over the course of a semester, students complete the Know Your Well Project. NRD and UNL staff work with the teacher to organize in-class presentations, sample collection (field) days, and lab testing. Through this collaboration, students gain insight into groundwater and the impact humans have on our natural resources.

NeRAIN Program

Program Background

NeRAIN is a program designed to get citizens involved with monitoring weather across the state. Information is updated daily and sent to an international precipitation and weather events database. The data provides important daily decision-making information.

Key Topics: weather events, rain gauge, precipitation

Grade Level: 7th-12th grade

Duration: 30-40 minutes

Items Needed: Computer, LCNRD provides a NeRAIN gauge for a class

Objective: Students will learn how to analyze and read a rain gauge instrument. They learn how to record and document weather events (rain, snow, hail, etc.). Students learn the importance of precise and accurate data collection.

SOIL

Don't Lose Ground

Where did the soil go?

Soil is essential for growing food for the world. Erosion is the main suspect in missing soil. Erosion occurs in many ways, including by wind, water, livestock, man, etc. There are conservation practices that can be put into place to minimize erosion and minimize further loss of soil.

Key Topics: erosion, soil, conservation practices, riparian buffer zones, windbreaks

Grade Level: K- 12th (Adaptable)

Duration: 30-40 minutes (Spring & Fall)

Items Needed: LCNRD provides necessary materials (Indoor or Outdoor activity)

Objective: Students will learn about different conservation practices that prevent erosion. Students can investigate different erosion scenarios and find out what happens with different erosion events. They will then be able to come up with solutions that would help minimize erosion.

Composting & Vermiculture

How can we rebuild our soil?

Composting is a great way to recycle food waste in your house, which can be used for gardening, house plants, or lawn fertilizer. Worms are an important part of the soil biome and are needed to break down organic matter to rebuild the soil.

Key Topics: Vermiculture, composting, recycling, food waste

Grade Level: 7th-12th grade

Duration: 30-40 minutes (Spring & Fall)

Items needed: LCNRD provides necessary materials (Outdoor/ Indoor Activity)

Objectives: Students will learn about soil biology, worms, composting, and how to build a worm farm and/ or composting bin. Worms are needed to rebuild nutrient-drained soil.

FORESTRY

Arbor Day Tree Presentation

Trees are important to life as we know it, from the food they produce, the shade they provide, the wildlife habitat they create, and the countless products humans can produce from them.

Key Topics: leaves, trunk, branches, roots, man-made goods, fruits, products

Grade Level: K-3rd grade

Duration: 30-40 minutes

Items needed: LCNRD provides seedlings for distribution

Objective: Learn the key vocabulary for trees, products from them, and how to plant them. Kids are given a seedling to share or plant under adult supervision.

Forester Q & A

LCNRD partners with Nebraska Forest Service with tree conservation programs. Have a "Q & A" session with the local forester right in the classroom.

Key Topics: forestry, trees, identifiers, deciduous, coniferous, shelter belt, windbreak

Grade Level: 7th- 12th grade

Duration: 30-40 minutes

Items Needed: LCNRD & Nebraska Forest Service will provide the necessary materials

Objective: Bring a local forester into the classroom/outside to learn about the importance of trees and their role in natural resource management.

RECYCLING

Reduce, Reuse, and Recycle

Recycling is an important way to reduce the impact of waste in our community, locally and globally. It is a very easy thing to do, and it matters more than you think.

Key Topics: reduce, reuse, recycle, garbage

Grade Level: K- 3rd grade

Duration: 30-40 minutes

Items Needed: Clean waste from the classroom/ home, LCNRD provides material bins.

Objective: Students will determine what garbage items can be reduced, reused, or recycled. Students will classify garbage into 3 piles: reduce, reuse, and recycle. The students will then explain why they chose to put the garbage in the piles they did.

EXPLORATION

Natural Resources Career Jeopardy

Natural Resources are very important to our communities, and there are people who help maintain these natural resources.

Grade Level: 9th-12th grade

Duration: 30-40 minutes

Items Needed: LCNRD will provide the Jeopardy game and prizes

Objective: Explore the various career opportunities in natural resources, conservation, and agriculture. Play a fun interactive Jeopardy game.

WILDLIFE

Partnership with NE Game & Parks Commission

NE Game & Parks Commission is always willing to teach kids of all ages about wildlife and habitat here in northeast Nebraska. They have programs such as Project Wild, Outdoor Classrooms, Trail Tales magazine, Master Naturalist guest speakers, Project Beak, and Nebraska Rare Species.

Grade Level: K- 12th grade (Adaptable)

Duration: 30-40 minutes

Items Needed: LCNRD & NE Game and Parks will provide the necessary materials

Objective: Bring NE Game and Parks Commission along with LCNRD into the classroom to help teach and promote the conservation of natural resources, specifically pertaining to wildlife and wildlife habitat in northeast Nebraska.

SPECIAL AREA PROJECTS

Bow Creek Watershed Project (BCWP)

BCWP addresses water quality impacts on the recreational use of Bow Creek due to *E. Coli* contamination. The BCWP coordinator is available to provide educational opportunities pertaining to water quality, soil health, and best management practices in the watershed.

Bazile Groundwater Management Area (BGMA)

Bazile Groundwater Management Area (BGMA) addresses high nitrate levels in the groundwater in the Bazile watershed. The BGMA technician and the BGMA team are available to provide educational opportunities pertaining to water quality, soil health, and best management practices in the BGMA.

Aowa Creek Flood Control Project

The Aowa Creek Flood Control Project provides erosion and flood protection for Newcastle, Ponca, and rural residents of the Aowa Creek watershed. LCNRD water resource staff will review the importance of the watershed structures and flood protection.